

NOTES ON MR. W. M. DALY'S COLLECTIONS OF LAND AND  
FRESH-WATER MOLLUSCA FROM SIAM.

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PLATE VIII.

THE late Mr. W. Mahon Daly, by whose untimely death from fever in December, 1900, the Society lost a valuable member, was engaged during the last two years of his life in the Forest Department of the Siamese Government. In Siam, as in India, he made large collections of land and fresh-water Mollusca, and on three occasions he sent specimens to me for identification. In the last letter that I received from him, dated 12th October, 1900, with a box of shells from Lampun in North Siam, he forwarded some notes on species previously sent, and suggested that these notes might be put into shape and inserted in the Society's journal. I think the best use I can make of the notes is to insert them in a list of the species that I have been able to identify. The greater part of this paper was written in 1901, but I was unable to finish it then.

The bulk of the collections are from Pitsunaloke, rather more than 200 miles north of Bangkok, and from Lampun about 150 miles farther north and near Chieng Mai (Zimmé).<sup>1</sup> This last place is the chief town of the Laos country. A few specimens are without any definite locality.

Some of Mr. Daly's Siam collections have now been received in England, and by the kindness of Mr. H. B. Preston I have had an opportunity of examining them. The most important form not previously received is the fine *Ampullaria* described below as *A. Dalyi*. There are several fresh-water shells that I have not identified, but they are mostly represented by single specimens without any defined locality, and it is not quite certain that they are from the upper Menam valley around Pitsunaloke and Lampun.

<sup>1</sup> This town affords an object-lesson in the system of spelling Oriental place-names. It was formerly known on maps as Zimmé or Zimmay, and a snail found in the neighbourhood was called *Hemiplecta Zimmayensis* (Proc. Zool. Soc., 1888, p. 241). Then some French travellers used the spelling Xieng Mai, hence *Amphidromus Xiengsis* noticed further on. In Mr. H. Warington Smyth's "Five Years in Siam" the place appears as Chieng Mai, and this is probably a nearly correct representation in English of the name as pronounced. In Stieler's Atlas the name is printed Schieng Mai (Zimme) in one map, and Kiang Mai in another. If the Laos language resembles Burmese in its orthography, which is likely, the correct transliteration is probably Khyeng Mai.

## GASTEROPODA.

## Family TESTACELLIDÆ.

## 1. STREPTAXIS PORRECTUS, Pfr., var. Lampun.

This is of about the same size as typical *S. porrectus*, and is principally distinguished by having a small tooth inside the right margin of the aperture, opposite the crest of the parietal lamella. One specimen, greatly distorted through an injury to the shell when half grown, is noted as "Found under plantain-trees generally."

Two other species of *Streptaxis* (one example of each), which I have not succeeded in identifying, were sent without definite locality.

## Family LIMACIDÆ.

## 2. CRYPTOSOMA PRESTANS (Gould). No precise locality.

This agrees better with *C. prestans* than with *C. Siamense*, Haines. The former is widely distributed in Burma, from the neighbourhood of Bhamo to Tavoy.

["Found during the rains only, in July and August, in very damp forest. These shells have a very gummy substance, which it is difficult to get off when handled."—W. M. D.]

## 3. MACROCHLAMYS PUMICATA (Morelet). Ser. Conch., iv (1875), p. 248, pl. xii, fig. 2.

A single specimen was sent, which, although very close to Morelet's species, is perhaps not absolutely identical. Numerous additional shells have been received by Mr. Preston.

["Common in evergreen forest. Never found in open or dry forest."—W. M. D.]

## 4. MACROCHLAMYS MOLECULA, Bens. Lampun.

Several specimens of this small species were sent, and they show passage from a form nearly resembling the type from Rangoon into a turbinate variety with a more raised spire. A specimen of the former with a major diameter of 5 mm. is 3 mm. high; one of the latter measures 5.4 mm. in diameter by 3.7 mm. in height.

Specimens from Moulmein and the Khási Hills were identified by Nevill (Handl., i, p. 38) with the original form from Rangoon. It is not, therefore, surprising that this species should be found in Siam also.

## 5. MACROCHLAMYS DUGASTI, Morlet. Journ. de Conch., 1891, pp. 25, 239, pl. v, figs. 1, 1a. Lampun and Pitsunaloke.

This is evidently a very common form in the upper Menam valley. It is a singularly globose shell, more so than any of its allies with which I am acquainted; and owing to the fact that in the figures above quoted, although views of the upper and lower surface are given, none is furnished showing the most characteristic aspect, it is by no means easy to identify the species. Moreover, the shell is described as *supra vix convexa*, the last whorl is said to be *infra subplanatus*, and the peristome is characterized by *labro superne ad insertionem anfractus penultimi incisura discreto*, none of which particulars (the last character

may be an individual peculiarity) agrees with Mr. Daly's specimens. A shell, however, belonging to Mr. Ponsonby, which, he informs me, is an authentic specimen of *M. Dugasti*, although distinguished by a higher spire, is, I think, clearly a variety of the Upper Siamese form. The latter I describe as follows:—

Testa subobtecte perforata, depresso-globosa, pallide fulvo-cornea, laevis, nitida, vix striatula; spira convexa vel depresso-conoidea, apice obtuso, sutura impressa; anfr. 7, convexi, lente accrescentes, ultimus ad peripheriam rotundatus, antice paululo descendens, subtus tumidus; apertura obliqua, lunaris; peristoma obtusum, albidum, margine dextro sinuato, basali subrecto, vix arcuato, columellari expansulo, ad insertionem in laminam triangularem desinente. Diam. maj. 14, min. 13 mm.; alt. 10 mm.

In some specimens the upper surface is darker-coloured than the lower, and the junction of the two shades at the periphery of the shell is marked by a fine groove which does not extend all the way round. This character is found in only a few specimens, and is doubtless accidental. There is considerable variation in the height of the spire.

In the slightly thickened peristome and the slight arcuation of its basal margin, this shell shows a considerable resemblance to the Burmese *M. petasus* (Bs.), which, however, has not the globose form of *M. Dugasti*.

The shell of one specimen contained the dried-up animal; and this I sent to Colonel Godwin-Austen, to whom I am indebted for the following details. He succeeded, after soaking the dried mass, in ascertaining that the sole of the foot was divided longitudinally into three areas; there were the usual peripodial fringe and grooves, and a short overhanging lobe above the mucous pore. There was apparently a right shell-lobe, but this could not be distinctly made out, nor could it be ascertained whether a left shell-lobe was present. The long flume of a spermatophore was found, indicating that the spermatheca must be very long in this species. After much soaking the jaw and radula were found. The jaw is curved slightly, but has no median projection on the cutting edge. The teeth of the radula are arranged in rows of 40 : 2 : 9 : 1 : 9 : 2 : 40 (51 : 1 : 51) teeth. The median tooth is tricuspid, the inner laterals, or admedians, have each a single cusp on the outer side, the marginals are minute and bicuspid. On the whole the characters agree sufficiently with *Macrochlamys* to render it probable, in Colonel Godwin-Austen's opinion, that *M. Dugasti* belongs to that genus.

The original locality of *M. Dugasti* was said to be in forests on the banks of the Menam Pinh, Western Laos. The Menam Pinh is probably the same as the Me Ping, shown in maps as running near Chieng Mai.

##### 5. *MACROCHLAMYS ANCEPS* (Gould).

Two small specimens of a shell which I take to be a variety of this species were sent to me in the first collection I received from Mr. Daly. A third occurs amongst the shells received by Mr. Preston. One of them, apparently adult, measures only 12 by 11 mm. in the two

diameters and 6 mm. in height, whereas the typical form from Tavoy measured 17, 16, and 9 mm. The colour of the Siamese shell, too, is light yellowish fulvous, not whitish horny, and the spire is rather lower than in the typical Tenasserim form.

The anatomy of *M. anceps* was described by Stoliczka (Journ. Asiat. Soc. Bengal, 1871, pt. ii, p. 233, pl. xvii, figs. 1-3), who referred the species to the genus *Rotula* of Albers. Godwin-Austen (Proc. Malac. Soc., vol. iii, p. 174) has shown that this form must be included in *Macrochlamys*, despite its being sharply carinate.

#### 7. HEMIPLECTA DISTINCTA, Pfr.

*Helix distincta*, Pfr.: Zeitschr. Malak., 1850, p. 69; Mart. & Chemn., 2nd ed., *Helix*, No. 863, pl. cxxxiv, figs. 1, 2 (1852); Morlet, [*Ariophanta* (*Hemiplecta*)], Journ. de Conch., 1891, p. 231.

*Helix Neptunus*, Pfr.: Proc. Zool. Soc., 1861, p. 190; id., Novit. Conch., p. 176, pl. xlvi, figs. 1, 2.

*Helix Pluto*, Pfr.: Proc. Zool. Soc., 1862, p. 268; id., Novit. Conch., p. 210, pl. lv, figs. 8, 9.

*Helix pernobilis*, Fér.: *apud* Pfr., Novit. Conch., p. 177, pl. xlvi, figs. 3 & 4, *nec* Fér.

*Hemiplecta Neptuna*, G-A.: Proc. Malac. Soc., vol. iv, p. 33.

I have compared the shells sent by Mr. Daly with the types of *H. distincta* from Cuming's collection in the Natural History Museum. Mr. Smith, to whom I am indebted for calling my attention to these and to the types of *H. Neptunus*, assures me that there is no doubt they are the original specimens in both cases. Owing to the fact that *H. distincta*, when originally described, was said to be from the Moluccas, there has been much confusion as to its identification, and it is, I think, owing to this that Colonel Godwin-Austen has referred Mr. Daly's shells to *H. Neptunus*, and has regarded this and *H. distincta* as different species. One of the shells sent by Mr. Daly is scarcely distinguishable from one of the types of *H. distincta*. Another specimen from Mr. Daly agrees better with *H. Neptunus*, whilst a third approaches *H. Pluto*, and I regard all as varieties of the same species. The shell identified by Pfeiffer as *H. pernobilis* must, I think, be another variety, but the original *H. pernobilis* of Férussac (only known from his figure) may be quite distinct, the reversed basal margin of the peristome, the external coloration, and the banding inside the mouth as represented in the figure being very different from the Siamese form.

The locality of the Molucca Islands, originally quoted by Pfeiffer for *H. distincta* when the shell was first described in 1850, appears to have been corrected by Haines (Ann. Lye. New York, vi, 1856, p. 158). The locality was evidently regarded as erroneous by Pfeiffer, for it is not mentioned in the later supplements to his *Mon. Helic. Viv.* The figure in Martini & Chemnitz is not good, and appears not to have been taken from any of the types in the Cuming Collection. There is evidently also much confusion as to the forms dissected by Semper.

The shell has a curious resemblance to the Malabar *H. basilicus*, Bens., both in form and in its peculiar sculpture.

The occurrence of *H. distincta* at Chieng Mai has already been recorded by Morlet, Journ. de Conch., 1891, p. 231.

[“Very common at Pitsunaloke in bamboo jungle, but rare in the North Laos States. Generally found in forests of the ‘Eng’ (*Dipterocarpus tuberculatus*). After a (forest) fire in the hot season it is a common occurrence to see eight or ten dead shells all together in the hole of a tree. The Laos eat this snail, and pronounce it ‘sweet and delicious.’”—W. M. D.]

8. HEMIPLECTA? DANAE, Pfr. Pitsunaloke.

Three specimens sent show some variation. Two agree well with the type in the Natural History Museum, the third has a higher spire. The original type was obtained by Mouhot, and was said (Proc. Zool. Soc., 1862, p. 268) to be from “Lao Mountains, Cambodia.” It is scarcely necessary to say that the Laos are a people who inhabit Northern Siam, not Cambodia.

[“Found at Pitsunaloke in bamboo jungle, but not common. I have not met with a single specimen in the Laos States.”—W. M. D.]

9. SESARA MEGALODON, Blf. Proc. Malac. Soc., ante, 1902, p. 35.

[“Common at Pitsunaloke. Found in evergreen forest.”—W. M. D.]

Family HELICIDÆ.

10. GANESSELLA CAPITUM (Bens.). Ann. & Mag. Nat. Hist., ser. II, vol. II (1848), p. 160.

The occurrence of this shell in Siam had already been noted by Morelet (Ser. Conch., iv, p. 254). As I pointed out in 1865 (Journ. Asiat. Soc. Bengal, vol. xxxiv, p. 93), *Helix hariola*, Bens., is not distinguishable from *Ganesella capitum*, although the latter is keeled and the former is not.

Including *G. hariola*, *G. capitum* has a very wide range, being found in Southern India (Nullymalay Hills), Behar, both south of the Ganges and at the base of the Himalayas, Upper Burma, Pegu, and Siam from the north to Bangkok.

The Siamese specimens sent are sharply keeled, and resemble Indian shells (typical *G. capitum*), except that they are lower in the spire.

[“Found all over Siam, but not common.”—W. M. D.]

11. HELIX (PLECTOTROPIS) OLDHAMI, Bens. Lampun.

This is another rather widely ranging form, being known previously from Assam to Pegu.

Specimens of *H. tapeina*, Bens., and *H. Huttoni*, Bens., were also received. Neither of these has a precise locality, and it is not quite certain whether they were really from Siam.

12. AMPHRIDROMUS GLAUCOLARYNX, Dohrn. Pitsunaloke; Lampun.

Several shells sent by Mr. Daly appear to me to belong to the above species, var.  $\beta$  (Proc. Zool. Soc., 1861, p. 207). They are small,

varying in length from 25.5 to 31 mm., and form a complete passage into *A. moniliferus* (Gould), (Proc. Boston Soc. Nat. Hist., vol. ii, 1846, p. 99), with which *A. Theobaldianus* (Bens.), (Ann. & Mag. Nat. Hist., ser. II, 1857, p. 329), appears to be identical (see Hanley, Conch. Ind., p. xi, note). Should this be confirmed it is probable that Gould's name will have to be adopted for this rather handsome *Amphidromus*.

13. *AMPHIDROMUS XIENGENSIS*, Morlet. Journ. de Conch., 1891, pp. 27, 240, pl. v, figs. 4, 4a. Pitsunaloke; Lampun.

The figure quoted is that of a larger shell with the spire more elongate than in the specimens sent by Mr. Daly. There is, however, considerable variation in this respect, and Ancy (Bull. Mus. Marseilles, vol. i, p. 134) has noticed the variability of this species. A specimen sent from Pitsunaloke is 32 mm. long by 17 mm. wide, whilst one from Lampun measures 23.5 by 13 mm., and another 26 by 15 mm.

Morlet, in describing this species, points out that it is allied to *A. filozonatus*, Mous., from Java.

The name *Xiengensis* is derived from the chief town of the Laos States.

14. *AMPHIDROMUS XIENGENSIS*, var. *TRYONI*, Pfr. Pilsbry: Man. Conch., ser. II, vol. xiii, p. 196.

This, at first sight, appears quite distinct from *A. Xiengensis*, but the two pass into each other. *A. Xiengensis* is often a white, almost porcelanic shell, with vertical purplish brown bands, more or less interrupted, on all the whorls, and with two broad dark stripes separated by a broad white stripe round the base. The var. *Tryoni* is pale to rich yellow, with only two well-defined dark stripes round the basal portion of the last whorl, much as in the common Burmese *A. Siensis* (Bens.), which differs by being a less slender form.

Specimens vary in length from 27 to 33 mm. I am indebted to Mr. Preston for calling my attention to Pilsbry's description of this variety.

[“These very handsome shells are common in both North and South Siam. The Karens use the shells as ornaments for small children. There are about five different species.”—W. M. D.] (This note refers to all the species of *Amphidromus*. The use of shells of *Amphidromus* as ornaments by the Karens has been noticed before, I think, by Mason, and certainly by Theobald.)

#### Family PUPIDÆ(?).

15. *CERASTUS SIAMENSIS* (Redf.). Pitsunaloke.

I am doubtful about the generic relations of this species, and by no means satisfied that it is an ally of *C. distans* (Pfr.) and *C. Abyssinicus* (Rüpp.).

[“Very common in long elephant grass. Not met with in the Laos States. I have not taken a single specimen near Lampun.”—W. M. D.]

## Family STENOGYRIDÆ.

## 16. OPEAS WALKERI (Bens). Lampun.

This species, originally described from the Andaman Islands, was found in the Shan States of Burma by Mr. F. Fedden (Theobald, Journ. Asiat. Soc. Bengal, 1870, pt. ii, p. 395; Nevill, Handlist Moll. Ind. Mus., i, p. 165). Its occurrence in Northern Siam is therefore not surprising.

This is perhaps the same as *Stenogyra turricula*, v. Martens (Ostas. Zool., ii, 1867, p. 82, pl. xxii, fig. 7), but it cannot be the original *S. turricula*, v. Mart. (Proc. Zool. Soc., 1860, p. 9).

[“Rare. Found on moss and brick walls.”—W. M. D.]

## 17. OPEAS GRACILE (Hutton). Lampun.

Immature specimens, probably of this species, have already been reported from Chieng Mai by Morlet (Journ. de Conch., 1891, p. 232).

[“Found on brick walls. Not common.”—W. M. D.]

## Family LIMNÆIDÆ.

## 18. PLANORBIS EXUSTUS, Desh. Lampun.

## Family CYCLOPHORIDÆ.

## 19. CYCLOPHORUS SPECIOSUS (Phil.).

[“Common all over North and South Siam, especially where there are rocks, or limestone caves. Eaten by the Karens and Laos after dropping in hot water for a few minutes. It is found in teak forests mostly.”—W. M. D.]

## 20. CYCLOPHORUS FLORIDUS, Pfr.

A considerable number of specimens amongst Mr. Daly's collections agree with the description of this species, but appear also to be merely a variety of *C. fulguratus*, Pfr., the common Pegu form.

## 21. SCABRINA LAOTICA, Müllff. Nachrbl. Deutsch. Malak. Ges., 1897, p. 35. Lampun.

Except in one respect, this shell agrees with the description quoted. The exception is that the peristome in Mr. Daly's specimens is simple and slightly expanded, not ‘multiplicatum’ as it is described by Müllendorff. But the difference may very possibly be due to none of the shells from Lampun being fully mature. (Since writing the above I have seen another specimen in Mr. Daly's collection with a thickened subduplex peristome.)

[The small shells are ribbed and are not common. Found only where rocks occur.”—W. M. D.]

## 22. RHIOSTOMA BERNARDII, Pfr. Lampun.

The two specimens sent agree fairly with the figures published (Journ. de Conch., x, 1862, p. 45, pl. vi, fig. 5; Conch. Leon., No. 23), but are smaller in dimensions (diam. maj. 14, min. 11 mm.; alt. 6 mm.).

This species and *P. (Rh.) tener* are intermediate in character between typical *Rhiostoma*, with the last whorl free for some distance near

the aperture, and the forms of *Pterocyclus* inhabiting the countries to the east of the Bay of Bengal. *P. Marionii*, Ancy (Bull. Mus. Marseille, i, 1898, p. 137, pl. ix, fig. F), is a typical *Rhiostoma*, near *P. Housei*, with which it has been united by Dautzenberg.

[“Not common. Found on rocks only.”—W. M. D.]

23. *RHIOSTOMA DALYI*, Blf. Proc. Malac. Soc., ante, 1902, p. 34.

This is perhaps only a variety of *R. Hainesi* (Pfr.).

[“Not common. Only taken at Pitsunaloke in one locality, in very dark and dense forest.”—W. M. D.]

24. *PUPINA ARTATA*, Bens. Lampun.

The four shells sent appear to me to agree very fairly with typical Moulmein specimens. I doubt whether the common Pegu form (the identity of which with the real *P. Peguensis*, Bens., is open to grave doubt) can be distinguished from *P. artata*. This subject has been discussed by Colonel Godwin-Austen (Land & F. W. Moll. India, vol. ii, pp. 34-41).

[“Very rare. I only got seven shells after hunting in different places for many days.”—W. M. D.]

#### Family VIVIPARIDÆ.

25. *VIVIPARA CINQULATA*, v. Mart. Lampun.

This is regarded by Nevill (Handlist Moll. Ind. Mus., vol. ii, p. 22) as a subspecies of *V. Bengalensis*, Lam., probably with justice.

[“Very common. Eaten by the Laos. On 15th October cleaned fifteen specimens, and all were full of young.”—W. M. D.]

26. *VIVIPARA TROCHOIDES*, v. Mart. Lampun and Pitsunaloke.

[“Common in swamps and open marshy land.”—W. M. D.]

27. *VIVIPARA EYRIESI*, Morelet.

The only specimen received came with shells from Pitsunaloke, and is probably from that neighbourhood.

#### Family AMPULLARIIDÆ.

28. *AMPULLARIA POLITA*, Desh.

A typical specimen without exact locality.

29. *AMPULLARIA CONICA*, Gray. Pitsunaloke; Lampun.

30. *AMPULLARIA GRACILIS*, Lea. Lampun.

[“Very common, and often found for many miles inland after floods.”—W. M. D.]

There are young shells of at least one other *Ampullaria*, perhaps of two species, but they are too immature to be identified.

31. *AMPULLARIA DALYI*, sp. nov. (vel *A. TURBINIS*, Lea, subsp. DALYI).  
Pl. VIII, Fig. 1.

Testa subobtecte perforata, globosa, olivacea, fasciis angustis crebris saturatoribus verticaliter picta, lævis, striis incrementi lineisque



impressis decussata; spira parum exserta, convexa, sutura impressa; anfr. 5, superne convexi, ultimus paulatim descendens, magnus, tumidus, subtus angustior; apertura subovalis, superne angulata, intus livida, obsolete fasciata; peristoma haud incrassatum, albidum, marginibus callo junctis, basali expansulo, columellari curvato. Alt. ad basin peristomatis 83, lat. 78 mm.; opere. 60 longum, 35 mm. latum.

*Hab.*—Siam. Type in the British Museum.

Numerous specimens of this fine *Ampullaria* have been received by Mr. Preston. They are in all probability from the upper Menam valley, but the exact locality has not been recorded. The general form is that of *A. turbinis*, Lea, but the present shell is at once distinguished by the want of the longitudinal coloured bands on the whorls, especially conspicuous inside the mouth, and by the dark transverse vertical stripes. The latter are very characteristic; something similar, though not so well marked, is often seen on the South Indian form of *A. globosa*, figured by Hanley (Conch. Ind., pl. cxiv, fig. 1), under Swainson's name of *A. carinata* (*A. globosa*, var. *carinata*, Nevill, Cat. Moll. Ind. Mus. Calcutta, fasc. E, 1885, p. 3).

#### Family MELANIIDÆ.

32. MELANIA TUBERCLATA (Müll.).

33. MELANIA SCHOMBURGI, Hanley.

34. MELANIA VARIABILIS, Bens.

35. MELANIA SCABRA (Müll.).

[“All these are very common in the rivers. The large ones (*M. variabilis*) are sold in the market and eaten by the Laos.”—W. M. D.]

36. MELANIA BINODOSA, sp. nov. (*vel* M. SPINATÆ, subsp.).

Pl. VIII, Fig. 2.

Testa turrata, subfusiformis, albida, epidermide fusco-olivacea induta; spira elevato-conica, apice eroso, sutura haud impressa; anfr. ad 6 ( $3\frac{1}{2}$  superstites), convexi, omnibus liris duabus nodiferis spiraliter armatis, ultimo etiam costis quatuor, infera subobsoleta, infra medium circumdato, apertura elliptico-rhombea, antice et postice angulata, intus sulcata, sulcis cum costis externis congruentibus; peristoma tenue, antice ad basin productum, marginibus callo junctis, externo recto, columellari retro-sinuato. Long. 42, diam. 23 mm.; ap. 21 longa, intus 12 mm. lata.

*Hab.*—Siam, in fluminibus majoribus. Type in the British Museum.

The nearest ally of this *Melania*, so far as I can ascertain, is *M. (Melanoides) spinata*, God.-Aust., from Cachar (Proc. Zool. Soc., 1872, p. 514, pl. xxx, fig. 1; Conch. Ind., pl. cix, fig. 1), but that has a higher spire, the mouth is smaller in proportion, and the columella more deeply curved backward above the basal termination of the aperture. The sculpture is similar, except that the keels round the base are more numerous. Another shell showing some resemblance to the present species is that from the Burmese Shan States figured

by Theobald as *M. variabilis*, var. *pyramidalis* (Journ. Asiat. Soc. Bengal, xxxiv, 1865, pt. 2, p. 274, pl. ix, fig. 7; see also Conch. Ind., pl. lxxv, fig. 3). The sculpture is different, as there are three nodose ridges round the whorls instead of two. A third allied form is *Melania pagodula*, Gould, from Tenasserim (made by H. Adams the type of a separate genus, *Brotia*, Proc. Zool. Soc., 1866, p. 150), but this has only a single spiny ridge round the whorls. Lastly, *M. præmordica*, Tryon, from Pegu (Amer. Journ. Conch., ii, pt. 2, 1866, p. 111, pl. x, fig. 3), resembles *M. binodosa* in shape, except that, judging from the figure, the aperture is narrower, and the ridges round the whorls are smooth, not nodose.

A smaller specimen measures 38 mm. in length and 22 mm. in breadth.

[“Common in large rivers.”—W. M. D.]

37. *PALUDOMUS SIAMENSIS*, sp. nov. Pl. VIII, Fig. 3.

Testa ovato-conica, solidiuscula, epidermide olivacea vel fusco-olivacea induta, sub epidermide albida, fasciis latis spiralibus castaneis circumdata, infra suturam et ad basin distincte, versus peripheriam obsolete sulcata; spira conica, apice acuto, erosulo, sutura impressa; anfr. ad 6 convexi, ultimus  $\frac{2}{3}$  testæ vix superans; apertura verticalis, ovata, superne angulata, intus trifasciata, fascia media cæteris angustiore; peristoma tenue, acutum, marginibus callo junctis, basali columellarique dilatatis, intus incrassatis. Operculum normale. Long. 11, diam. 7.5 mm.; ap. long. 7, lat. 5.

*Hab.*—Siam, in valle superiore Menam fluminis. Type in the British Museum.

I have no exact locality, but it is evident that this *Paludomus*, the first, so far as I can learn, that has been recorded from Siam, is from the upper Menam valley.

A species referred by its describer, Commandant L. Morlet, to the Assamese *P. conica*, Gray, has been obtained in Cambodia (Journ. de Conch., xxxvii, 1889, p. 146).

The largest specimen I have seen is 12 by 8 mm. The extreme apex is wanting in all the shells.

The present species is most nearly allied to *P. regulata*, Bs., from Pegu, but that is considerably larger; the spiral sulcation is much stronger, the spire longer and the mouth shorter in proportion. There are only three chestnut spiral bands in *P. Siamensis* instead of four, and the second is narrower than the others, whereas in *P. regulata* there are usually four, all of equal breadth; but this is not a character of importancé, for these coloured bands vary in different individuals.

## PELECYPODA.

### Family UNIONIDÆ.

38. *UNIO HOUSEI*, Lea.

39. *UNIO GRAVIDUS*, Lea.

40. *UNIO CRISPATUS*, Gld.

[“Common in all rivers.”—W. M. D.] This applies to all three species.

## Family CYRENIDÆ.

41. CORBICULA, two or three species. Lampun, etc.

The specimens sent are of two sizes, large and small. Some of the smaller shells may be the young of the larger, which agree fairly with *C. rhomboidea*, Prime. Upwards of thirty species appear to have been named from Indo-China, and as I have no faith in the validity of these specific forms, I do not think time would be well spent in endeavouring to identify Mr. Daly's shells.

[“Very common. I picked up dozens in my compound, which was flooded during the recent rains. All were empty, having been eaten by some small insect.”—W. M. D.]

This note is of interest as it shows the migratory tendencies of *Corbicula*. A compound is the enclosure round a house. In August, 1900, Mr. Daly wrote to me that his compound was 4 feet under water.

## EXPLANATION OF PLATE VIII.

- FIG. 1. *Ampullaria Dalyi*, n.sp.  
,, 2. *Melania binodosa*, n.sp.  
,, 3. *Paludomus Siamensis*, n.sp.
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